

CASE REPORT

Infected False Aneurysm at the Site of Peripheral Balloon Angioplasty

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Introduction

Aneurysm development at the site of previous percutaneous transluminal angioplasty (PTA) is a rarely detected complication of the procedure. We describe the development of an infected false aneurysm in a patient following PTA of the superficial femoral artery. This complication has not been previously recorded at this site. This case highlights the need for rigorous aseptic technique during angioplasty.

Case Report

A 63-year-old man was admitted following an episode of collapse. He had felt unwell for a few days and complained of a painful right calf and increasing shortness of breath. Three weeks previously he had undergone left transfemoral aortography for claudication and successful balloon angioplasty of a localised stenosis of the right superficial femoral artery (Figs 1, 2). He had tolerated this procedure well and reported a significant improvement in his claudication distance. In the past, he had undergone coronary bypass grafting following a myocardial infarction.

On physical examination, the patient was pyrexial (39°C), tachycardic and dyspnoeic at rest. The jugular venous pressure was elevated and auscultation of his chest revealed bilateral basal crepitations and a systolic murmur at the apex. The patient's right calf was hot, swollen and tender. There were superficial abrasions to the right knee as a result of the fall when he

collapsed. Haematological and biochemical profiles were normal. Transoesophageal echocardiography did not demonstrate any cardiac valve vegetations, and ascending venography of the right lower limb and a ventilation / perfusion scan of the lungs were normal. No organisms were cultured from urine or sputum

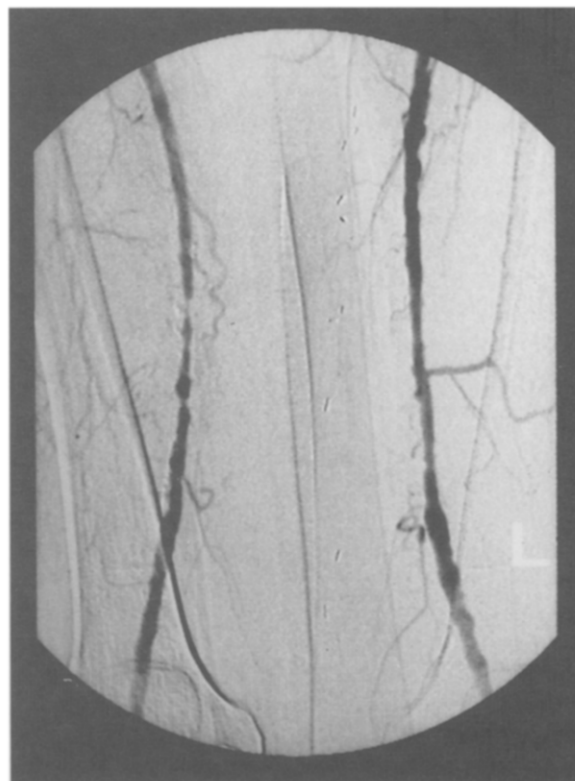


Fig. 1. Diseased right superficial femoral artery prior to angioplasty.

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specimens, however blood culture isolated *Staphylococcus aureus*, which was demonstrated to be sensitive to flucloxacillin.

The patient was initially treated with intravenous frusemide and flucloxacillin. His general condition improved and his fever settled. However, on the fifth day after admission, he developed a purpuric rash on his right leg and complained of increasing pain along the medial aspect of his right thigh. The patient subsequently noticed a lump in his right thigh and complained of increasing pain in his right calf on exercise. Physical examination at this time revealed a tender pulsatile mass in the thigh, an absent right popliteal pulse, and septic emboli to the right calf and foot (Fig. 3). A diagnosis of false aneurysm at the site of previous balloon angioplasty was confirmed by Duplex ultrasonography and angiography (Fig. 4).

At operation, the right long saphenous vein was first harvested from groin to proximal calf. The vein was then reversed, tunnelled posteriorly away from the aneurysm and anastomosed to the common femoral artery proximally and the infrageniculate popliteal artery distally. After restoration of flow and

closure of all wounds, the aneurysm was exposed through a separate longitudinal incision in the anteromedial aspect of the thigh. The superficial femoral artery was ligated proximally and distally and the 3 cm false aneurysm with contained thrombus and adjacent arterial wall were resected. The wound was then irrigated with aqueous betadine and closed over a wide bore sump drain containing gentimycin beads. No organisms were cultured from the resected aneurysm, thrombus or adjacent arterial wall.

The patient's postoperative recovery was complicated by several episodes of fever and rigors, but no organisms could be cultured from the peripheral blood or drain fluid. The drain was progressively shortened and the wound allowed to heal by secondary intention. The patient was discharged from hospital 1 month after operation and continued to take oral antibiotics for a further 2 weeks.

At last review, three months after surgery, the patient remained well and had suffered no further episodes of fever or rigors. He reported significant improvement in his claudication distance and physical

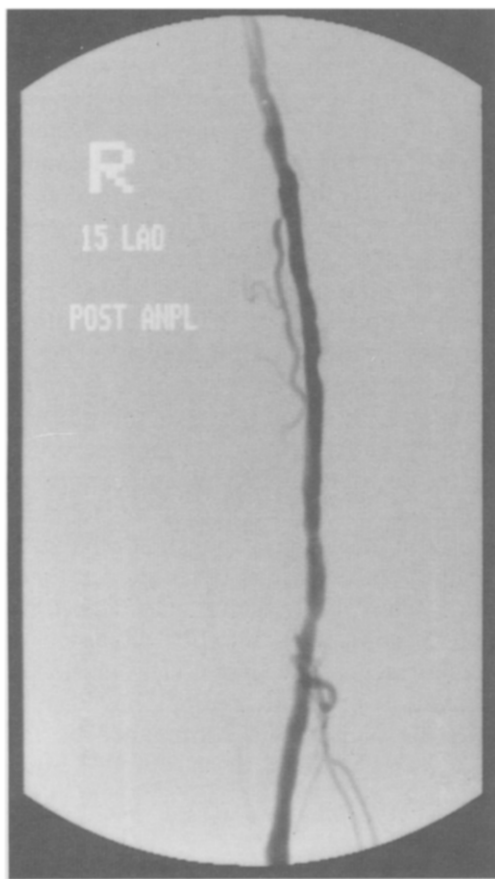


Fig. 2. Right superficial femoral artery immediately after angioplasty with 7 mm diameter, 3 cm long balloon.

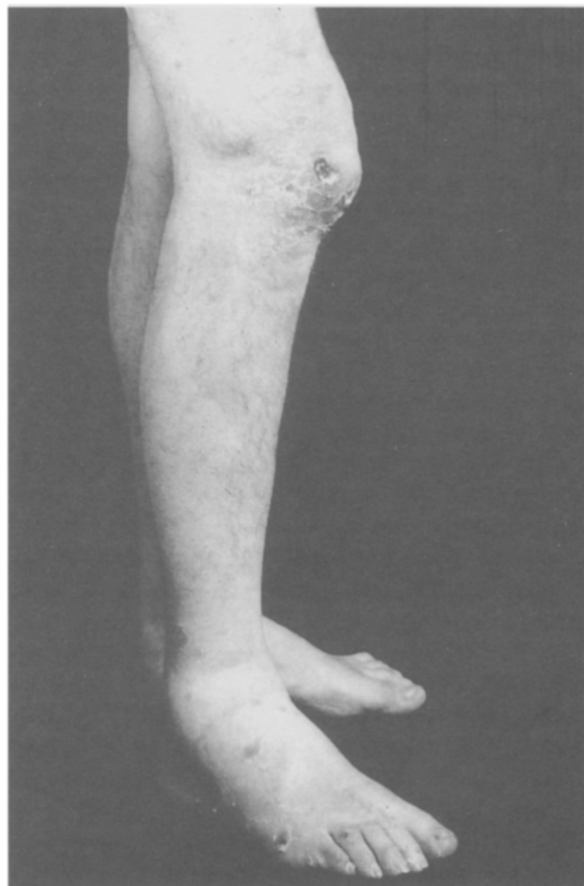


Fig. 3. Right leg showing septic emboli on the foot and lower leg.

examination revealed that the graft was functioning and all the wounds had healed well.

Discussion

Percutaneous balloon angioplasty has become an established method of treating symptomatic stenoses of the peripheral arteries. With the exception of acute thrombosis, complications at the site of dilatation are rare.¹ In a recent review, Vive and Bolia² reported two cases (from 558 patients over a 5-year period) of false aneurysm formation at the site of peripheral balloon angioplasty, and discovered six further cases reported previously in the literature, one involving the superficial femoral artery. The true incidence of aneurysm formation may be much higher because of lesions that do not present clinically and the low rate of repeat angiography.

We have found only one previous report of infected false aneurysm at the site of peripheral

balloon angioplasty.³ The clinical presentation and subsequent resolution of the patient's symptoms suggest that the false aneurysm was infected. Although we were unable to culture any organisms from the resected aneurysm, our patient had been treated with antibiotics for more than 3 weeks before operation, and in the similar condition of mycotic aneurysm with obvious infective aetiology, a significant proportion of cases fail to produce a positive bacteriological culture.⁴

Infection at the site of angioplasty may result from either contamination of the balloon catheter or from bacteraemia during or soon after the dilatation of the arterial wall. It is not certain in this patient which was the case, as he may have had an infection after being discharged from hospital. Shawker *et al.*⁵ documented a transient bacteraemia in 4% of patients undergoing arterial catheterisation, but none developed infection as a result. More recently, Patel *et al.*⁶ have reported septic arthritis of the knee following intra-arterial thrombolysis of a thrombosed femoropopliteal graft, but the arterial catheter had remained in situ for several days, and evidence of pericatheter infection had been noticed at the time of catheter withdrawal.

Balloon dilatation of a diseased artery results in considerable local trauma and exposes subendothelial tissues to the circulation. It seems likely therefore that the risk of infecting the arterial wall is greater during angioplasty than during diagnostic angiography, and this case highlights the need for a meticulous aseptic technique during percutaneous balloon angioplasty.

Infected aneurysms threaten both life and limb. They tend to enlarge rapidly⁷ and may rupture or interrupt the blood supply to a limb.⁴ In addition, they result in persistent systemic sepsis. The aim of treatment must therefore be to isolate the aneurysm and to eradicate infection. Arterial continuity should be restored by routeing a bypass graft away from the site of infection, employing an autogenous conduit wherever possible. Thorough surgical toilet is mandatory and we have found topical antibiotics helpful when dealing with sepsis at other sites in the arterial tree.⁸ Nonetheless, bacteraemia may persist for some time after resection, and antibiotic therapy should be continued for several weeks after operation. In our case the early postoperative course has been encouraging, but the patient will continue to be followed closely so as to ensure early detection of residual or recurrent infection.

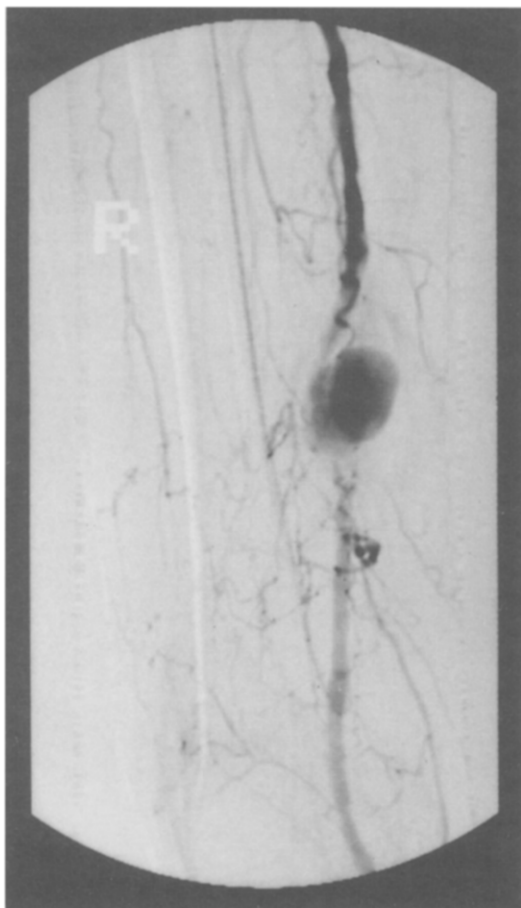


Fig. 4. Angiogram 6 weeks after balloon angioplasty showing aneurysm at the site of the previous balloon inflation.

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